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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/753,884	01/07/2004	James R. Younkin	040001	6891
49614	7590	07/12/2005	EXAMINER	
JAMES RICHARDS 58 BONING RD FAYETTEVILLE, TN 37334			COLLINS, TIMOTHY D	
			ART UNIT	PAPER NUMBER
			3643	
DATE MAILED: 07/12/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/753,884	Applicant(s) YOUNKIN, JAMES R.	
	Examiner Timothy D. Collins	Art Unit 3643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-34 is/are pending in the application.
- 4a) Of the above claim(s) 9-11, 13, 14, 19, 21, 23, 24, 28, 29 and 32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6,12,15-18,22,25-27,30,31,33 and 34 is/are rejected.
- 7) ☐ Claim(s) 7,8 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>1/7/04</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 9-11,13,14,19,21,23,24,28,29 and 32 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 4/25/05.
2. The examiner agrees with the applicant that electromechanical is generic to optical and switch and therefore the elected claims readable on the species are 1,2,4-8,12,15-18,20,22,25-27,30,31,33 and 34.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1,2,4-6,12,15,16,25-27 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 3598999 to Hofmeister (hereinafter called 999).
 - a. Re claim 1, 999 discloses a trim system in an aircraft, the aircraft having a primary control system (the flight controls 15 and 19). The trim system having a control servo (inherently seen in that the device of 999 may be used on a craft with an autopilot as seen in column 1 at lines 17-20) coupled to the primary control system through a coupling device. This can be seen in that the cables 15 and 19 are said to be connected to the stick or wheel which the pilot uses to manually control the craft, however as stated in column 1, the craft may have an

autopilot. Inherently in the autopilot system there must be a "control servo" this will actuate the crafts control surfaces when not under manual control. The examiner reads the entire system of automatic controls and automatic trim as being the "coupling device". Also the examiner reads the inherent motor or actuator for the control surface when on autopilot as the control servo. Also the motor for the trim (56 or 48) is the trim servo. 999 discloses a first trim sensor (figure 4 and figure 6), and producing a first trim signal (output of the amplifier 63 or the control circuit 47) responsive to control force through the coupling device. The trim servo (48 or 56) being responsive to the first trim signal for adjusting the trim device.

- b. Re claim 2, 999 discloses that the coupling device comprises a link, see figures 4 and 6, the link is the number 44 and 51.
- c. Re claim 4, 999 discloses that the link comprises a push-pull rod (number 44, in figure 4).
- d. Re claim 5, 999 discloses a flexible portion (52 and 53 in figure 6) having a flexing response to the control force, and a flexing response sensor (the bridge of figure 7) which produces a first trim signal responsive to the flexing of the flexible portion, the signal is output to the transformer and then to the amplifier.
- e. Re claim 6, 999 discloses that the flexible portion produces a rotational response to the control force (this is seen in that the signal from the flexible portion causes the motor 56 to rotate).

- f. Re claim 12, 999 discloses that the first trim signal includes a response portion that is proportional to the control force, as seen at least in column 4 at lines 45-54 and 67-68.
- g. Re claim 15, 999 discloses that the link is coupled to a primary control cable (as seen in figures 4 and 6 in that the link is coupled to cables 15 and 19, through pulleys 14 and 18).
- h. Re claim 16, 999 discloses that the link is coupled through a cable attaching device comprising a bar, in figure 1 at number 10 at least.
- i. Re claim 25, 999 discloses a first trim controller (numbers 59,61,62 and 63) being responsive to the first trim sensor and the trim servo (56) being responsive to the first trim controller.
- j. Re claim 26, 999 discloses that the first trim controller provides a pulsed output to drive the servo. This is seen inherently because the device is in the neutral or off position sometimes and it is in the on position other times, therefore it is "pulsed". It is suggested that the applicant claim further details of the pulsing of the device to preclude its reading on the on and off operation of a trim system in general.
- k. Re claim 27, 999 discloses that the trim controller is responsive to the polarity of the trim signal as seen at least in column 4 at lines 50-54.
- l. Re claim 30, 999 discloses that the first trim controller provides an output that is proportional to the first trim signal as seen in lines 67-72 of column 4 and also in figure 7.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 31, is rejected under 35 U.S.C. 103(a) as being unpatentable over 999 as applied above in claims 1,2,4-6,12,15,16,25-27 and 30.

a. Re claim 31, 999 does not disclose that the first trim controller output is pulsed with a variable duty cycle proportional to the first trim signal (which the examiner takes as being a "digital system". However it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used an analog to digital converter to allow for the device of 999 to be used in connection with a flight control computer for the added control and benefits of fast reaction times to changing conditions afforded by the use of computers, benefits that flight control computers are well known for.

6. Claims 17,18,22,33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over 999 as applied above in claims 1,2,4-6,12,15,16,25-27 and 30 and in view of USPN 5686907 to Bedell et al. (hereinafter called 907)

b. Re claims 17 and 18, 999 discloses a trim sensor and trim signal, however does not state that there is a second trim sensor and trim signal that is independent of the first, the sensors sensing the positions of the control surface

and the forces on them. However 907 teaches of first and second sensors for the positions of control surfaces. 907 discloses that a second sensors' readings must match a first sensors' readings before performing a function. As seen in figure 3 at least and also in the summary of the invention, it can be seen that the redundant sensor systems that are separate and independent are useful for verifying authenticity of readings and determining if a sensor has failed.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the teachings of redundant and independent sensors into the device of 999 so as to verify the authenticity of a reading before performing a function as taught by 907. This would be done so as to allow for reliable service of the craft and quick safe operation of a system as taught by 907. Note: Also it is common practice in the aerospace industry to use dual sensors and to only operate a system if both agree, for the sake of safety.

c. Re claim 22, 999 discloses an electromechanical sensor, however does not disclose a second electromechanical sensor. 907 however does disclose a second sensor. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the teachings of an electromechanical sensor into the second sensor so as to allow for use of common parts and for ease of replacement of the first or second sensor with one type of sensor (the same sensor as is shown in 999). Also the use of one type of sensor makes it easier to compare the readings of the sensors for agreement.

d. Re claims 33 and 34, 999 discloses a first trim sensor (figure 4 and figure 6), and producing a first trim signal (output of the amplifier 63 or the control circuit 47) responsive to control force and a trim servo responsive to the first signal as seen in 56 or 48. However 999 does not state that there is a second trim sensor and trim signal that is independent of the first, the sensors sensing the positions of the control surface and the forces on them and the signals controlling the trim servo. However 907 teaches of first and second sensors for the positions of control surfaces. 907 discloses that a second sensors' readings must match a first sensors' readings before performing a function. As seen in figure 3 at least and also in the summary of the invention, it can be seen that the redundant sensor systems that are separate and independent are useful for verifying authenticity of readings and determining if a sensor has failed. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the teachings of redundant and independent sensors into the device of 999 so as to verify the authenticity of a reading before performing a function such as controlling the trim servo as taught by 907. This would be done so as to allow for reliable service of the craft and quick safe operation of a system as taught by 907 when the sensors agree. Note: Also it is common practice in the aerospace industry to use dual sensors and to only operate a system if both agree, for the sake of safety.

Allowable Subject Matter

7. Claims 7,8 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record all failed to show either alone and/or in combination the first sensor having a portion transverse to the force transmitted and the portion coupled to the flexible portion with it being responsive to the flexing response with the flexing response sensor coupled to the transverse portion. Also the second trim sensor being included in the control servo is not shown.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following disclose aircraft trim systems.

e. USPN 4684085

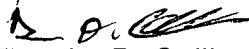
f. USPN 5012423

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy D. Collins whose telephone number is 571-272-6886. The examiner can normally be reached on M-F, 7:00-3:00, with every other Fri. off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter M. Poon can be reached on 571-272-6891. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Timothy D. Collins
Patent Examiner
Art Unit 3643